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09/925,020	08/09/2001	Fusasuke Gotoh	Q65831	2484

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EXAMINER

KRAMER, DEVON C

ART UNIT PAPER NUMBER

3683

DATE MAILED: 06/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/925,020

Applicant(s)

GOTOH ET AL.

Examiner

Devon C Kramer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 April 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2) Claims 1, 9 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP-1122753 (using US Patent 6170625 to Tanaka as an English equivalent) in view of JP-2000-119673 (using US Patent 6329326 to Iso et al. as an English equivalent) and US Patent 5655844 to Takano.

Re: claims 1 and 17-18. Tanaka shows in figure 1 a rolling bearing structured such that a plurality of rolling elements 18 are respectively held between inner 16 and outer 17 rings by a retainer 19 as shown in figure 1, lubricant is sealed therein by a seal 20 as disclosed in col. 3 lines 66-67, a rotary body 1,11 provided with the outer ring and a shaft 2 provided with the inner ring can be connected together by a clutch mechanism 13 and wedged space disclosed in col. 4 lines 7-8, when the rotary body and the shaft are connected together by the clutch mechanism, the rolling bearing can be used to receive rotation load while the relative rotation between the inner and outer rings is zero as disclosed in col. 4 lines 7-10, but does not specifically disclose the limitation of the lubricant specifically being grease and the limitation wherein an initial radial clearance between the inner and outer rings is set such that a bearing effective clearance when the rolling bearing is incorporated between the rotary body and the shaft can provide a

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positive value. Further, Tanaka is silent to the contact position of the rolling element with respect to the raceway surface of the inner ring is gradually shifted when the relative rotation between the inner and outer rings is zero.

Iso et al. teach in line 1 of the abstract the use of grease used as a lubricant in a rolling bearing. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the lubricant of Tanaka to have included grease, as taught by Iso et al., in order to provide a well-known means of lubricating the rolling elements of the bearing to prevent premature wear between the rolling element-race/ring contacting surface.

Takano teaches in col. 2 lines 27-36 the use of an initial radial clearance between the inner and outer rings being set such that a bearing effective clearance when the rolling bearing is incorporated between the rotary body and the shaft can be provided a positive value. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the arrangement of the inner and outer rings of Tanaka, as modified, to have included a bearing effective clearance that can provide a positive value, as taught by Takano, in order to provide a means of improving the fatigue life of the contacting faces within the bearing. Please note that the contact area between the raceway surface and the inner ring of Tanaka as modified by Iso and further modified by Takano would inherently shift when the forces applied to the device change due to the bearing clearance.

Re: claim 9. Iso et al. teach in the abstract the use of a rolling bearing having a dynamic viscosity at 40 degrees Celsius of a base oil of a grease being $80 \text{ mm}^2/\text{s}$ or

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more. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the viscosity of the base oil of the grease of Tanaka, as modified, to have been 80 mm²/s or more, as taught by Iso et al., in order to provide improved torque properties at low temperatures.

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3) Claims 2 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP-1122753 (using US Patent 6170625 to Tanaka as an English equivalent) in view of JP-2000-119673 (using US Patent 6329326 to Iso et al. as an English equivalent) and US Patent 5655844 to Takano as applied to claim 1 above, and further in view of US Patent 4371220 to Brucher.

Re: claim 2. Brucher teaches in col. 4 lines 61-63 the use of a bearing effective clearance being set at 0.020mm or more. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the bearing effective clearance of Tanaka, as modified, to have been set at 0.020mm or more, as taught by Brucher, in order to provide a means of providing adequate space for ensuing ample lubrication of the bearing device.

Re: claim 10. Iso et al. teach in the abstract the use of a rolling bearing having a dynamic viscosity at 40 degrees Celsius of a base oil of a grease being 80 mm²/s or more. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the viscosity of the base oil of the grease of Tanaka, as modified, to have been 80 mm²/s or more, as taught by Iso et al., in order to provide improved torque properties at low temperatures.

4) Claims 3 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP-1122753 (using US Patent 6170625 to Tanaka as an English equivalent) in view of JP-2000-119673 (using US Patent 6329326 to Iso et al. as an English equivalent) and US Patent 5655844 to Takano as applied to claim 1 above, and further in view of US Patent 4629337 to Teramachi.

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Re: claim 3. Teramachi teaches in col. 4 lines 1-5 the use of depths of grooves formed in inner and outer rings 2,10 being respectively 17% or more of the diameter of rolling elements 4. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the depths of the grooves of the inner and outer rings of Tanaka, as modified, to have been 17% or more of the diameter of the rolling elements, as taught by Teramachi, in order to provide a means of increasing the amount of contact area between the grooves and the rolling elements to assist in maintaining the rolling elements within the confines of the grooves.

Re: claim 11. Iso et al. teach in the abstract the use of a rolling bearing having a dynamic viscosity at 40 degrees Celsius of a base oil of a grease being $80 \text{ mm}^2/\text{s}$ or more. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the viscosity of the base oil of the grease of Tanaka, as modified, to have been $80 \text{ mm}^2/\text{s}$ or more, as taught by Iso et al., in order to provide improved torque properties at low temperatures.

5) Claims 4 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP-1122753 (using US Patent 6170625 to Tanaka as an English equivalent) in view of JP-2000-119673 (using US Patent 6329326 to Iso et al. as an English equivalent) and US Patent 5655844 to Takano and US Patent 4371220 to Brucher as applied to claim 2 above, and further in view of Teramachi.

Re: claim 4. Teramachi teaches in col. 4 lines 1-5 the use of depths of grooves formed in inner and outer rings 2,10 being respectively 17% or more of the diameter of rolling elements 4. It would have been obvious to one of ordinary skill in the art at the

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time the invention was made to have modified the depths of the grooves of the inner and outer rings of Tanaka, as modified, to have been 17% or more of the diameter of the rolling elements, as taught by Teramachi, in order to provide a means of increasing the amount of contact area between the grooves and the rolling elements to assist in maintaining the rolling elements within the confines of the grooves.

Re: claim 12. Iso et al. teach in the abstract the use of a rolling bearing having a dynamic viscosity at 40 degrees Celsius of a base oil of a grease being 80 mm²/s or more. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the viscosity of the base oil of the grease of Tanaka, as modified, to have been 80 mm²/s or more, as taught by Iso et al., in order to provide improved torque properties at low temperatures.

6) Claims 5 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP-1122753 (using US Patent 6170625 to Tanaka as an English equivalent) in view of JP-2000-119673 (using US Patent 6329326 to Iso et al. as an English equivalent) and US Patent 5655844 to Takano as applied to claim 1. above, and further in view of US Patent 4650195 to Dreschmann et al.

Re: claim 5. Dreschmann et al. teach in figure 2 and in col. 2 lines 17-20 the use of an interference of a seal lip of a seal being 60% or more of an axial clearance. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the seal of Tanaka, as modified, to have included a seal having a seal lip being 60% or more of the axial clearance, as taught by Dreschmann et al., in

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order to provide a means of reducing the corrosion and, thus, improving the life of the bearing.

Re: claim 13. Iso et al. teach in the abstract the use of a rolling bearing having a dynamic viscosity at 40 degrees Celsius of a base oil of a grease being $80 \text{ mm}^2/\text{s}$ or more. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the viscosity of the base oil of the grease of Tanaka, as modified, to have been $80 \text{ mm}^2/\text{s}$ or more, as taught by Iso et al., in order to provide improved torque properties at low temperatures.

7) Claims 6 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP-1122753 (using US Patent 6170625 to Tanaka as an English equivalent) in view of JP-2000-119673 (using US Patent 6329326 to Iso et al. as an English equivalent) and US Patent 5655844 to Takano and US Patent 4371220 to Brucher as applied to claim 2 above, and further in view of Dreschmann et al.

Re: claim 6. Dreschmann et al. teach in figure 2 and in col. 2 lines 17-20 the use of an interference of a seal lip of a seal being 60% or more of an axial clearance. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the seal of Tanaka, as modified, to have included a seal having a seal lip being 60% or more of the axial clearance, as taught by Dreschmann et al., in order to provide a means of reducing the corrosion and, thus, improving the life of the bearing.

Re: claim 14. Iso et al. teach in the abstract the use of a rolling bearing having a dynamic viscosity at 40 degrees Celsius of a base oil of a grease being $80 \text{ mm}^2/\text{s}$ or

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more. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the viscosity of the base oil of the grease of Tanaka, as modified, to have been $80 \text{ mm}^2/\text{s}$ or more, as taught by Iso et al., in order to provide improved torque properties at low temperatures.

8) Claims 7 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP-1122753 (using US Patent 6170625 to Tanaka as an English equivalent) in view of JP-2000-119673 (using US Patent 6329326 to Iso et al. as an English equivalent) and US Patent 5655844 to Takano and Teramachi as applied to claim 3 above, and further in view of Dreschmann et al.

Re: claim 7. Dreschmann et al. teach in figure 2 and in col. 2 lines 17-20 the use of an interference of a seal lip of a seal being 60% or more of an axial clearance. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the seal of Tanaka, as modified, to have included a seal having a seal lip being 60% or more of the axial clearance, as taught by Dreschmann et al., in order to provide a means of reducing the corrosion and, thus, improving the life of the bearing.

Re: claim 15. Iso et al. teach in the abstract the use of a rolling bearing having a dynamic viscosity at 40 degrees Celsius of a base oil of a grease being $80 \text{ mm}^2/\text{s}$ or more. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the viscosity of the base oil of the grease of Tanaka, as modified, to have been $80 \text{ mm}^2/\text{s}$ or more, as taught by Iso et al., in order to provide improved torque properties at low temperatures.

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9) Claims 8 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP-1122753 (using US Patent 6170625 to Tanaka as an English equivalent) in view of JP-2000-119673 (using US Patent 6329326 to Iso et al. as an English equivalent) and US Patent 5655844 to Takano and US Patent 4371220 to Brucher and Teramachi as applied to claim 4 above, and further in view of Dreschmann et al.

Re: claim 8. Dreschmann et al. teach in figure 2 and in col. 2 lines 17-20 the use of an interference of a seal lip of a seal being 60% or more of an axial clearance. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the seal of Tanaka, as modified, to have included a seal having a seal lip being 60% or more of the axial clearance, as taught by Dreschmann et al., in order to provide a means of reducing the corrosion and, thus, improving the life of the bearing.

Re: claim 16. Iso et al. teach in the abstract the use of a rolling bearing having a dynamic viscosity at 40 degrees Celsius of a base oil of a grease being $80 \text{ mm}^2/\text{s}$ or more. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the viscosity of the base oil of the grease of Tanaka, as modified, to have been $80 \text{ mm}^2/\text{s}$ or more, as taught by Iso et al., in order to provide improved torque properties at low temperatures.

Response to Arguments

10) Applicant's arguments filed 4/8/05 have been fully considered but they are not persuasive.

Applicant argues that Tanaka, Iso, and Takano fail to teach a bearing effective clearance in the radial direction is previously set at a positive value, a contact position of the rolling element with respect to the raceway surface of inner ring is shiftable in a circumferential direction thereof in the case where the inner and outer rings are rotated with their relative rotation zero. Please note that this is what is stated in column 2 lines 25-35 of Takano. The purpose of this, as stated by Takano, is to increase the fatigue life of the bearings.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, general knowledge in the bearing art led to the combination of the references.

Conclusion

11) The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Marie and Boutaghou et al teach bearings with positive clearances.

12) THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

13) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Devon C Kramer whose telephone number is 571-272-7118. The examiner can normally be reached on Mon-Fri 8-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Marmor can be reached on 571-272-7095. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Devon C Kramer
Examiner
Art Unit 3683

DK

DEVON C. KRAMER
PATENT EXAMINER

Devon
6/6/05